SEPIDEH NESHATFAR

Machine Learning Researcher, Specializing in Robust and efficient ML, Graph Neural Networks & Computer Vision

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PROFESSIONAL SUMMARY

Ph.D. candidate in Computer Science with extensive expertise in **machine learning** and **deep learning systems**, specializing in **graph neural networks**, **robustness** enhancement, and **domain adaptation**. Proven track record of developing **production-ready AI systems** with applications in **autonomous driving**, **adverse condition computer vision**, **graph-based adversarial learning**, and **transformers**. Skilled in **efficiency optimization**, **robustness enhancement**, and **scalable ML pipeline** development. Seeking opportunities to contribute to cutting-edge AI projects as a **Machine Learning Engineer**.

TECHNICAL SKILLS

Machine Learning & AI

- Graph Neural Networks (GNN) & Graph Learning
- Robustness & Adversarial Machine Learning
- Domain Adaptation & Transfer Learning
- Deep Learning & Neural Networks
- Transformers & Attention Mechanisms
- Computer Vision & Object Detection

Programming & Development

- **Python** (Advanced), **C/C++**
- **PyTorch**, **DGL**, **PyG** (Graph Neural Network Libraries)
- **ML Pipeline Development**
- Git, Linux/Unix Systems
- SQL Server

RESEARCH & DEVELOPMENT EXPERIENCE

Research Assistant| University of Maine, Orono, ME, USA | 2021 – Present

Machine Learning Systems Development:

- Designed and implemented novel **graph transformer** framework for **domain adaptation**, achieving superior node classification performance through innovative source pruning techniques
- Developed **robust subgraph learning** system demonstrating state-of-the-art performance **against adversarial attacks** using **early-representation learning** [3]
- Created **efficient graph summarization** framework incorporating theoretical metrics and **label information**, significantly outperforming existing methods [1]
- Built advanced computer vision system for autonomous driving, achieving exceptional performance in **adverse weather** using YOLO architecture and **perceptual loss** [2]

Implementation & Optimization:

- Engineered **scalable ML pipelines** for large-scale graph and vision data processing
- Implemented distributed training systems for handling complex datasets
- Optimized model architectures achieving **significant performance improvements**
- Developed comprehensive validation frameworks for **robust ML systems**

ADDITIONAL INDUSTRY EXPERIENCE

Data Engineer | Trade Observation Company, Isfahan, Iran| 2020

- Built automated financial data extraction system using Python
- Developed real-time stock market analysis pipeline

Machine Learning Engineer Intern | IUT Institute of AI, Isfahan, Iran| 2019

- Implemented production-grade CNN framework for content classification
- Developed automated data pipeline for **large-scale dataset processing**
- Led deployment of ML models in production environment

EDUCATION

- **Ph.D. in Computer Science**| University of Maine *(2021 - Expected December 2025)*
- **M.S. in Computer Science** | University of Maine *(2021 - 2023)*
- **B.S. in Computer Engineering**| Isfahan University of Technology (*2015 - 2020*)

PUBLICATIONS & ONGOING RESEARCH

[1] **S. Neshatfar**, A. Magner, and S. Y. Sekeh, "Promise and Limitations of Supervised Optimal Transport-Based Graph Summarization via Information Theoretic Measures," **IEEE Access**, vol. 11, pp. 87533-87542, 2023.

[2] S. Gharatappeh, **S. Neshatfar**, S. Y. Sekeh, and V. Dhiman, "FogGuard: Guarding YOLO Against Fog Using Perceptual Loss," **IEEE Computing Conference 2025**.

[3] **S. Neshatfar** and S. Y. Sekeh, "Robust Subgraph Learning by Monitoring Early Training Representations," **The 11th IEEE International Conference on Intelligent Data and Security 2025**.

ACADEMIC SERVICE & ACHIEVEMENTS

Teaching & Academic Leadership| University of Maine, Orono, ME, USA

- Instructed and mentored **100+ students** in advanced computer science courses including **Programming Languages** and **Computer Architecture** (Teaching Assistant, UMaine 2021-2023)
- Delivered **guest lectures** in **Machine Learning course** (Spring 2024)
- Led hands-on workshops, mentoring 30+ participants as **Deep Learning Summer Bootcamp 2023 Instructor**
- Served as **Technical Reviewer** as part of Sekeh Lab for top-tier AI conferences: **CVPR 2024** (Computer Vision) and **AISTAT 2023** (Machine Learning)

Selected Honors

- Ranked in the **Top 0.01%** in National University Entrance Exam of Iran (Among 182,000+ participants)
- **IEEE Machine Learning Certificate** holder, specializing in deep learning and neural networks